REMARKS

The Official Action of November 11, 2003 has been carefully considered and reconsideration of the application as amended is respectfully requested.

The Abstract has been rewritten as requested by the Examiner at paragraph 4 of the Official Action.

The claims have been amended to remove the bases for the Examiner's rejections at paragraphs 5A and 5B of the Official Action and more clearly to distinguish over the cited art. New claims 16-22 have been added more completely to define the subject matter which Applicants regard as their invention. Support for the recitations in claims 1 and 16-18 relating to the irregular cross section being capable of producing shear stress on the target molecules appears in the specification as filed at, for example, page 5, last line to page 6, line 16. Support for the recitations in claim 19 appears in the specification as filed at, for example, page 7, lines 18-21. All claims as amended are respectfully believed to be sufficiently definite to satisfy the dictates of 35 USC 112, second paragraph.

Applicants respectfully note that the withdrawn process claims have been amended to depend from the product claims. Applicants respectfully request that, upon the allowance of a product claim, the process claims which depend from an allowed product claim be rejoined in this application in accordance with the

provisions of MPEP Section 821.04.

The claims stand rejected under 35 USC 102(a) and 102(e) as allegedly being anticipated by Knapp et al. Applicants respectfully traverse this rejection.

All claims presently of record recite a device that has an irregular cross section that is capable of producing a shear stress on target molecules passing through the device. As discussed in the specification at, for example, the paragraph bridging pages 6 and 7, the shear stress produced by the irregular cross section of the claimed device changes the conformation of the target molecules and thereby facilitates the desired hybridization reaction and allows non-specifically binding molecules to be removed.

In contrast, the cited art does not show or suggest that the channels of the microfluidic device described therein should have a size and structure that would produce shear stress on a target molecule such as, for example, a single-stranded nucleic acid target molecule, a double-stranded nucleic acid target molecule or a protein target molecule. Indeed, as shown by the following table, the purpose, components and function of the prior art device are such as would not have provided any motivation for one of skill in the art to modify the channels of the prior art device to arrive at the recited channels with irregular cross section as claimed.

	Claimed Invention	USP 6,235,471
Purposes	1. The claimed invention is directed to using the irregularly changed size of the cross section of the microfluidic channel of the first portion to generate a shear stress, and thereby the conformation of the target molecules can be changed to facilitate the hybridization reaction and the non-specifically binding molecules can be removed 2. The mixing range of the sample can be increased	The citation is directed to a microfluidic device with the integration of the techniques of PCR sequencing, screening, electrophoresis, etc., which is useful in detecting diseases, SNP analysis and genome type analysis.
Components of the Devices	1. A microfluidic channel comprising a first portion and a second portion following the first portion, wherein the first portion has an irregular cross section and the second portion has a probe. 2. A fluid driving element connecting the ends of the channel with tubes, wherein the fluid driving element can move the target molecules back-and-forth for repeatedly passing through the second portion.	1. A first reaction channel and at least a first reagent introducing channel (col. 5, lines 5-10). 2. A material transport system (col. 5, lines 18-20). 3. Intersection channels.

Functions of the Components of the Devices	1. The irregular cross section of the first portion generates shear stress to destroy the intra-molecular hydrogen bond of the nucleic acid molecules and the two-and-three-dimensional structures of the protein molecules; and increase the diffusion rate of the samples. 2. The fluid driving element can drive the fluid back and forth so that the target molecule can repeatedly pass through the second portion thereby increasing the hybridization reaction of the target molecule with the probe.	1. The intersection comprises a widened channel or chamber and is used for facilitating mixing of the sample and dilute base or to allow more refined control of reaction times (col. 32, lines 30-34). 2. The variation of the cross section in the reaction channel is to change the temperature for PCR reaction (col 19, lines 60-65).

In view of the above, it is respectfully submitted that the cited art does not show or suggest all features of the claimed inventor and cannot set forth even a *prima facie* case of obviousness for the claims as amended. Accordingly, it is respectfully believed that all rejections and objections of record have been overcome and that the application is now in allowable form. An early notice of allowance is earnestly solicited and is believed to be fully warranted.

Respectfully submitted,

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